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L2: Entry 1 of 1 File: JPAB Apr 12, 2002

PUB-NO: JP02002110726A
DOCUMENT-IDENTIFIER: JP 2002110726 A
TITLE: SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD

PUBN-DATE: April 12, 2002

INVENTOR-INFORMATION:
NAME COUNTRY
TAGO, MASAKI
TOMITA, YOSHIHIRO
TAKAHASHI, KENJI

ASSIGNEE-INFORMATION:
NAME COUNTRY
NEC CORP
MITSUBISHI ELECTRIC CORP
TOSHIBA CORP

APPL-NO: JP2000304708
APPL-DATE: October 4, 2000

INT-CL (IPC): H01 L 21/60

ABSTRACT:

PROBLEM TO BE SOLVED: To prevent structural changes which changes a soft jointing material to an intermetallic compound layer by diffusion, and to prevent lowering of reliability due to defects of segregation or the like for occurrence by diffusion in a high-temperature environment or a temperature cycle environment, during assembly or in practical use in a flip-chip assembly of a semiconductor chip.

SOLUTION: In this semiconductor device, an electrode 2 on the semiconductor chip 1 and the electrode 2 on a substrate 4 are electrically connected so as to mutually face, and the electrode 2 on the semiconductor chip 1 and the electrode 2 on the substrate 4 are jointed via a metal compound layer 5, formed from a desired electrode material and the jointing material 3.

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L3: Entry 1 of 1 File: JPAB Jul 25, 1991

PUB-NO: JP403171643A
DOCUMENT-IDENTIFIER: JP 03171643 A
TITLE: JOINTING OF METAL MEMBER, METHOD AND DEVICE FOR MANUFACTURE OF SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE USING SAME

PUBN-DATE: July 25, 1991

INVENTOR-INFORMATION:
NAME COUNTRY
NAKAO, TAKASHI
EMOTO, YOSHIAKI
SEKIGUCHI, KOICHIRO
IKETANI, MASAYUKI
SAWARA, KUNIZO
YOSHIDA, IKUO
KONO, AKIOMI

ASSIGNEE-INFORMATION:
NAME COUNTRY
HITACHI LTD

APPL-NO: JP01309922
APPL-DATE: November 29, 1989

US-CL-CURRENT: 228/180.22
INT-CL (IPC): H01L 21/60

ABSTRACT:

PURPOSE: To reduce heat damage to a semiconductor chip and to realize a reduction in a reflow time and a reduction in the size of a reflow furnace by a method wherein an atomic beam or an ion energy beam is irradiated on the joint surfaces of a pair of metal members housed in a vacuum container and thereafter, the metal members are transferred to a container, in which a high-purity inert gas-containing atmosphere is formed, and the joint surfaces of the metal members are pressure-welded to each other under normal pressures.

CONSTITUTION: A pair of source guns 18 for transforming Ar gas introduced in a surface activating chamber 17 into an atom beam are installed in the chamber 17 and a semiconductor chip 5 and a package substrate 3 are irradiated with this atomic beam. Thereby, an activating treatment is performed on the surfaces of CCB bumps 2 and electrodes 4. After that, the chip 5 and the substrate 3 are immediately transferred to a jointing chamber 20 as they are respectively housed in trays 15a and 15b through a second load-lock chamber 19. A high-purity inert gas-containing atmosphere of normal pressures is formed in the chamber 20. A temporary jointing mechanism and a fusion jointing mechanism are provided in the interior of the chamber 20 and the temporary jointing and the final jointing are performed using these mechanisms.